

CALIFORNIA COASTAL COMMISSION

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REGULAR CALENDAR
STAFF REPORT AND PRELIMINARY RECOMMENDATION

Application No.: 6-08-68

Applicant: Hamilton Trust

Agent: Bob Trettin

Description: Fill an existing seacave and construct a 50 ft.-long, 37 ft.-high tiedback seawall.

Site: On the public beach and bluff below 407 Pacific Avenue, Solana Beach, San Diego County. APN 263-051-04

STAFF NOTES:

Summary of Staff's Preliminary Recommendation: Staff is recommending approval of the subject development, with conditions, as the applicant has demonstrated that the existing blufftop residential structure is in danger from erosion. Due to a recent bluff collapse and exposure of the clean sand layer below the residence, the applicant's geotechnical representative has performed a slope stability analysis of the overall site and concluded that the blufftop structure is in danger from erosion. Based on the applicant's geotechnical reports, the seawall and seacave fill are necessary to protect the structure at the top of the bluff. The Commission's staff engineer and geologist have reviewed the applicant's geotechnical assessment and concur with its conclusions.

The proposed development has been conditioned to mitigate its impact on coastal resources such as scenic quality, public access and recreation opportunities, and shoreline sand supply. In addition, the applicant is proposing to pay an in-lieu fee of \$17,297.44 for the associated impacts of the development on regional sand supply and is proposing the payment of a separate mitigation fee of \$50,000.00 to the City of Solana Beach for the impacts of the development on public access and recreational opportunities. With the proposed mitigation, impacts of the proposed shoreline protection on regional sand supply and public access and recreation will be mitigated to the extent feasible. A special condition has been attached which requires the applicant to acknowledge that should additional stabilization be proposed in the future, the applicant will be required to identify and address the feasibility of all alternative measures which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, and would reduce

the risk to the blufftop structures and provide reasonable use of the property. Other conditions involve such requirements as the timing of construction, the appearance of the seawall and approval from other agencies, among others.

The City of Solana Beach does not yet have a certified LCP. Therefore, Chapter 3 policies of the Coastal Act are the standard of review.

Substantive File Documents: City of Solana Beach General Plan and Zoning Ordinance; City Resolution No. 2007-042/Interim Fee Process for Approvals Associated With Permits for Construction of Bluff Retention Devices; City of Solana Beach CUP #17-08-11/Hamilton; "Preliminary Geotechnical Evaluation" by Soil Engineering Construction dated March 28, 2008; Coastal Development Permits Nos. 4-87-161/Pierce Family Trust and Morgan; 6-87-371, Van Buskirk; 5-87-576, Miser and Cooper; 6-00-9/Del Mar Beach Club, 6-99-100/Presnell, et. al, 6-99-103/ Coastal Preservation Association, 6-00-66/Pierce, Monroe, 3-02-024/ Ocean Harbor House, 6-02-02/Gregg, Santana, 6-02-84/Scism, 6-03-33/Surfsong; 6-04-83/Cumming, Johnson, 6-05-72/Las Brisas and 6-07-134/Brehmer,Caccavo.

I. PRELIMINARY STAFF RECOMMENDATION:

The staff recommends the Commission adopt the following resolution:

MOTION: *I move that the Commission approve Coastal Development Permit No. 6-08-68 pursuant to the staff recommendation.*

STAFF RECOMMENDATION OF APPROVAL:

Staff recommends a **YES** vote. Passage of this motion will result in approval of the permit as conditioned and adoption of the following resolution and findings. The motion passes only by affirmative vote of a majority of the Commissioners present.

RESOLUTION TO APPROVE THE PERMIT:

The Commission hereby approves a coastal development permit for the proposed development and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. Standard Conditions.

See attached page.

III. Special Conditions.

The permit is subject to the following conditions:

1. Final Revised Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, final plans for the seawall and seacave fill that are in substantial conformance with the submitted plans dated 3/10/08 by Soil Engineering Construction, Inc. Said plans shall first be approved by the City of Solana Beach and be revised to include the following:

- a. Sufficient detail regarding the construction method and technology utilized for constructing the seawall so as to gradually blend it into the adjacent natural bluffs and/or existing seawalls to minimize the erosive effects of the approved seawall on adjacent bluffs.
- b. Sufficient detail regarding the construction method and technology utilized for texturing and coloring the seawall and concrete infill behind the seawall. Said plans shall confirm, and be of sufficient detail to verify, that the seawall and concrete backfill color and texture closely matches the adjacent natural bluffs, including provision of a color board indicating the color of the material.
- c. Any existing permanent irrigation system located on the bluff top site(s) shall be removed or capped.
- d. All runoff from impervious surfaces on the top of the bluff shall be collected and directed away from the bluff edge towards the street.
- e. Existing accessory improvements (i.e., decks, patios, walls, windscreens, etc.) located in the geologic setback area on the site(s) shall be detailed and drawn to scale on the final approved site plan and shall include measurements of the distance between the accessory improvements and the bluff edge (as defined by Section 13577 of the California Code of Regulations) taken at 3 or more locations. The locations for these measurements shall be identified through permanent markers, benchmarks, survey position, written description, or other method that enables accurate determination of the location of structures on the site. Any removed accessory structures located within 5 ft. of the bluff edge shall not be replaced in a location closer than 5 feet landward of the natural bluff edge or approved reconstructed bluff edge. Any new Plexiglas or other glass

wall shall be non-clear, tinted, frosted or incorporate other elements to inhibit bird strikes.

The permittees shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

2. Mitigation for Impacts to Sand Supply. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that a fee of \$17,297.44 has been deposited in an interest bearing account designated by the Executive Director, in-lieu of providing the total amount of sand to replace the sand and beach area that will be lost due to the impacts of the proposed protective structure. All interest earned by the account shall be payable to the account for the purposes stated below.

The developed mitigation plan covers impacts only through the identified 20-year design life of the seawall. No later than 19 years after the issuance of this permit, the permittees or their successor in interest shall apply for and obtain an amendment to this permit that either requires the removal of the seawall within its initial design life or requires mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 20-year design life. If, within the initial design life of the seawall, the permittees or their successor in interest obtain a coastal development permit or an amendment to this permit to enlarge or reconstruct the seawall or perform repair work that extends the expected life of the seawall, the permittee shall provide mitigation for the effects of the seawall on shoreline sand supply for the expected life of the seawall beyond the initial 20-year design life.

The purpose of the account shall be to establish a beach sand replenishment fund to aid SANDAG, or a Commission-approved alternate entity, in the restoration of the beaches within San Diego County. The funds shall be used solely to implement projects which provide sand to the region's beaches, not to fund operations, maintenance or planning studies. The funds shall be released only upon approval of an appropriate project by the Executive Director of the Coastal Commission. The funds shall be released as provided for in a MOA between SANDAG, or a Commission-approved alternate entity and the Commission, setting forth terms and conditions to assure that the in-lieu fee will be expended in the manner intended by the Commission. If the MOA is terminated, the Commission can appoint an alternative entity to administer the fund.

3. Mitigation for Impacts to Public Access and Recreational Use. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall provide evidence, in a form and content acceptable to the Executive Director, that the interim mitigation fee of \$50,000.00, required by the City of Solana Beach to address adverse impacts of the shoreline protection on public access and recreational, has been satisfied.

WITHIN 6 MONTHS of approval of the City's economic study of the impacts associated with shoreline devices, the applicant shall submit to the Executive Director for review and written approval, documentation of the final mitigation fee amount required by the City to address impacts of the proposed shoreline protection on public access and recreation. If the amount differs from the interim amount required above, then the applicant shall submit an application for an amendment to this permit to adjust the mitigation fee to be paid to the City to address adverse impacts to public access and recreational use resulting from the proposed development.

4. Monitoring Program. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit to the Executive Director for review and written approval, a monitoring program prepared by a licensed civil engineer or geotechnical engineer to monitor the performance of the seawall, seacave fill and concrete backfill which requires the following:

- a. An annual evaluation of the condition and performance of the seawall, seacave fill and concrete backfill addressing whether any significant weathering or damage has occurred that would adversely impact the future performance of the structures. This evaluation shall include an assessment of the color and texture of the seawall and backfill comparing the appearance of the structures to the surrounding native bluffs.
- b. Annual measurements of any differential retreat between the natural bluff face and the seawall face, at the north and south ends of the seawall and at 20-foot intervals (maximum) along the top of the seawall face/bluff face intersection. The program shall describe the method by which such measurements shall be taken.
- c. Provisions for submittal of a report to the Executive Director of the Coastal Commission by May 1 of each year (beginning the first year after construction of the project is completed) for a period of three years and then, each third year following the last the annual report, for the life of the approved seawall. However, reports shall be submitted in the Spring immediately following either:
 1. An "El Niño" storm event – comparable to or greater than a 20-year storm.
 2. An earthquake of magnitude 5.5 or greater with an epicenter in San Diego County.

Thus, reports may be submitted more frequently depending on the occurrence of the above events in any given year.

- d. Each report shall be prepared by a licensed civil, geotechnical engineer or geologist. The report shall contain the measurements and evaluation required in sections a, and b above. The report shall also summarize all measurements and analyze trends such as erosion of the bluffs or changes in sea level and the

stability of the overall bluff face, including the upper bluff area, and the impact of the seawall on the bluffs to either side of the wall. In addition, each report shall contain recommendations, if any, for necessary maintenance, repair, changes or modifications to the project.

- e. An agreement that the permittee shall apply for a coastal development permit within 90 days of submission of the report required in subsection c. above for any necessary maintenance, repair, changes or modifications to the project recommended by the report that require a coastal development permit.

The permittee shall undertake monitoring in accordance with the approved monitoring program. Any proposed changes to the approved monitoring program shall be reported to the Executive Director. No changes to the monitoring program shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

5. Storage and Staging Areas/Access Corridors. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit to the Executive Director for review and written approval, final plans approved by the City of Solana Beach indicating the location of access corridors to the construction site and staging areas. The final plans shall indicate that:

- a. No overnight storage of equipment or materials shall occur on sandy beach or public parking spaces at Fletcher Cove. During the construction stages of the project, the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion. In addition, no machinery shall be placed, stored or otherwise located in the intertidal zone at any time, except for the minimum necessary to construct the seacave infill and seawall. Construction equipment shall not be washed on the beach or in the Fletcher Cove parking lot or access road.
- b. Access corridors shall be located in a manner that has the least impact on public access to and along the shoreline.
- c. No work shall occur on the beach on weekends, holidays or between Memorial Day weekend and Labor Day of any year.
- d. The applicant shall submit evidence that the approved plans/notes have been incorporated into construction bid documents. The staging site shall be removed and/or restored immediately following completion of the development.

The permittee shall undertake the development in accordance with the approved plans. Any proposed changes to the approved plans shall be reported to the Executive Director. No changes to the plans shall occur without a Coastal Commission approved amendment

to this coastal development permit unless the Executive Director determines that no amendment is legally required.

6. Storm Design/Certified Plans. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit certification by a registered civil engineer that the proposed shoreline protective devices are designed to withstand storms comparable to the winter storms of 1982-83.

In addition, **within 60 days following construction**, the permittee shall submit certification by a registered civil engineer, acceptable to the Executive Director, verifying the seawall, seacave fill and concrete backfill have been constructed in conformance with the approved plans for the project.

7. Future Response to Erosion. If in the future the permittee seeks a coastal development permit to construct additional bluff or shoreline protective devices, the permittee will be required to include in the permit application information concerning alternatives to the proposed bluff or shoreline protection that will eliminate impacts to scenic visual resources, recreation and shoreline processes. Alternatives shall include but not be limited to: relocation of all or portions of the principle structure that are threatened, structural underpinning, and other remedial measures capable of protecting the principal structure and providing reasonable use of the property, without constructing bluff or shoreline stabilization devices. The information concerning these alternatives must be sufficiently detailed to enable the Coastal Commission or the applicable certified local government to evaluate the feasibility of each alternative, and whether each alternative is capable of protecting existing structures that are in danger from erosion. No additional bluff or shoreline protective devices shall be constructed on the adjacent public bluff face above the approved seawall or on the beach in front of the proposed seawall unless the alternatives required above are demonstrated to be infeasible. No shoreline protective devices shall be constructed in order to protect ancillary improvements (patios, decks, fences, landscaping, etc.) located between the principal residential structures and the ocean.

8. Future Maintenance. The permittee shall maintain the permitted seawall, seacave fill and concrete backfill in its approved state. Maintenance of the seawall and concrete backfill shall include maintaining their color, texture and integrity. Any change in the design of the project or future additions/reinforcement of the seawall, seacave fill and concrete backfill beyond exempt maintenance as defined in Section 13252 of the California Code of Regulations to restore the structure to its original condition as approved herein, will require a coastal development permit. **However, in all cases, if after inspection, it is apparent that repair and maintenance is necessary, including maintenance of the color of the structures to ensure a continued match with the surrounding native bluffs, the permittee shall contact the Executive Director to determine whether a coastal development permit or an amendment to this permit is legally required, and, if required, shall subsequently apply for a coastal development permit or permit amendment for the required maintenance.**

9. Other Permits. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the permittee shall provide to the Executive Director copies of all other required local, state or federal discretionary permits for the development authorized by CDP #6-08-68. The applicant shall inform the Executive Director of any changes to the project required by other local, state or federal agencies. Such changes shall not be incorporated into the project until the applicant obtains a Commission amendment to this permit, unless the Executive Director determines that no amendment is legally required.

10. State Lands Commission Approval. **PRIOR TO COMMENCEMENT OF CONSTRUCTION**, the applicants shall submit to the Executive Director for review and written approval, a written determination from the State Lands Commission that:

- a) No state lands are involved in the development; or
- b) State lands are involved in the development, and all permits required by the State Lands Commission have been obtained; or
- c) State lands may be involved in the development, but pending a final determination of state lands involvement, an agreement has been made by the applicant with the State Lands Commission for the project to proceed without prejudice to the determination.

11. Public Rights. The Coastal Commission's approval of this permit shall not constitute a waiver of any public rights that exist or may exist on the property. The permittee shall not use this permit as evidence of a waiver of any public rights that exist or may exist on the property.

12. Assumption of Risk, Waiver of Liability and Indemnity Agreement. By acceptance of this permit, the applicant acknowledges and agrees (i) that the site may be subject to hazards from erosion and coastal bluff collapse; (ii) to assume the risks to the applicant and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.

13. Best Management Practices. **PRIOR TO THE ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit for review and written approval of the Executive Director, a Best Management Plan approved by the City of Solana Beach that effectively assures no shotcrete or other construction byproduct will be allowed onto the sandy beach and/or allowed to enter into coastal waters. The Plan shall apply to both concrete pouring/pumping activities as well as shotcrete/concrete application activities. During shotcrete/concrete application specifically, the Plan shall at

a minimum provide for all shotcrete/concrete to be contained through the use of tarps or similar barriers that completely enclose the application area and that prevent shotcrete/concrete contact with beach sands and/or coastal waters. All shotcrete and other construction byproduct shall be properly collected and disposed of off-site.

The applicant shall undertake the development in accordance with the approved Plan. Any proposed changes to the approved Plan shall be reported to the Executive Director. No changes to the Plan shall occur without a Coastal Commission approved amendment to this coastal development permit unless the Executive Director determines that no amendment is legally required.

14. Other Special Conditions of the City of Solana Beach Permit #17-08-11. Except as provided by this coastal development permit, this permit has no effect on conditions imposed by the City of Solana Beach pursuant to an authority other than the Coastal Act.

15. Deed Restriction. **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicant shall submit to the Executive Director for review and approval documentation demonstrating that the applicant has executed and recorded against the parcel(s) governed by this permit a deed restriction, in a form and content acceptable to the Executive Director: (1) indicating that, pursuant to this permit, the California Coastal Commission has authorized development on the subject property, subject to terms and conditions that restrict the use and enjoyment of that property; and (2) imposing the Special Conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the Property. The deed restriction shall include a legal description of the entire parcel or parcels governed by this permit. The deed restriction shall also indicate that, in the event of an extinguishment or termination of the deed restriction for any reason, the terms and conditions of this permit shall continue to restrict the use and enjoyment of the subject property so long as either this permit or the development it authorizes, or any part, modification, or amendment thereof, remains in existence on or with respect to the subject property.

IV. Findings and Declarations.

The Commission finds and declares as follows:

1. Detailed Project Description/History. Proposed is the infill of an existing seacave (approximately 74 cu. yds.) and construction of an approximately 50 ft.-long, 37 ft. high, 2 ft.-wide colored and textured concrete tiedback seawall on the public beach below a residential structure at 407 Pacific Avenue in the City of Solana Beach. The seawall will be located over the face of the seacave and will include five feet of concrete backfill behind and above the seawall. The applicant also proposes to pay an in-lieu fee to mitigate the adverse effects of the shoreline protective devices on the local sand supply of \$17,297.44 and to pay an in-lieu to the City of Solana Beach of \$50,000.00 to mitigate the adverse impacts to public access and recreational use.

The residence is located approximately 26 feet from the edge of the bluff edge and the applicant has demonstrated through a slope stability analysis that the existing residence is

at threat from erosion. The home was constructed in 1973 and the seacave has been subject to previous coastal permitting. An emergency permit was authorized in February of 1998 to fill the seacave/undercut area (Ref. 6-98-9-G/Hamilton) and the work subsequently occurred. The Commission approved a regular follow-up coastal development permit for the seacave fill in 1998 (Ref. CDP 6-98-9/Hamilton). The permit was approved with special conditions requiring, among other things, the submittal of a monitoring report, maintenance of the fill, and the approval from the State Lands Commission and other permitting agencies. However, the applicant failed to comply with the conditions of approval such that the existing fill is unpermitted. In addition, in April of 2005, the Commission approved an amendment to the seacave fill (Ref. CDP 6-98-9-A1/Hamilton) that permitted additional fill for an expanded portion of the seacave. The conditions of the amendment were also never satisfied and the work did not occur. The applicant is proposing to fill the unfilled sections of the seacave as part of the subject permit request.

The site is located west of Pacific Avenue, south of Tide Beach Park, in the City of Solana Beach. The City of Solana Beach owns the bluff face and beach below the residence. The project will be located approximately 300 feet south of Tide Beach Park public access stairway and approximately ½ mile to the north of Fletcher Cove, the City's central beach access location. The City of Solana Beach does not yet have a certified LCP. Therefore, the Chapter 3 policies of the Coastal Act are the standard of review.

2. Geologic Conditions and Hazards. Section 30235 of the Coastal Act states, in part:

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

In addition, Section 30253 of the Coastal Act states, in part:

New development shall do all of the following:

(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs...

The proposed project involves the fill of an existing seacave and the construction of an approximately 50 ft.-long, 37 ft.-high tiedback seawall and concrete infill behind the

seawall to a level of approximately 5 ft. above the seawall. The threatened residential structure on the blufftop is located as close as 26 ft. from the edge of the bluff.

The applicants' geotechnical reports indicate that the project is required to protect the residential structure threatened by erosion due to the unstable geologic composition of the lower bluff, the exposed clean sands layer within the mid-bluff area as well as the seacave and its potential failure. The applicants' geotechnical report from March 2008 identifies that:

Based on our observation, the lower sandstone bluff is undercut several feet (6+ feet east) from the face of previously repaired undercut fill. This undercutting/cave extends from the property line extension south over 21 feet behind the concrete infill plug. It is our opinion that this lower bluff condition is subject to imminent collapse which, in turn, would cause a rather significant mid to upper bluff failure which will threaten the residential structure above as well as the neighboring properties. In addition, at present, the clean sand lense is exposed at the north end of the property above the severely undercut sandstone bluff below. Our slope stability analysis indicates that by ignoring the affects of the severely undercut lower bluff, the factor of safety is approximately 1.27. However, if we assume that the lower bluff has collapsed, exposing the just a moderate vertical clean sand exposure, the factor of safety at the residence is 1.17. It is our opinion the 1.17 factor of safety should be used to judge the stability of the residential structure and is justification for the repairs proposed in this report. ("Preliminary Geotechnical Evaluation" by Soil Engineering Construction dated March 28, 2008)

The applicant's geotechnical reports describe the clean sands lens as being located between the Torrey Sandstone and Marine Terrace deposits at approximately elevation 25-35 ft. Mean Sea Level (MSL). To protect the residence, in addition to the seacave fill, the applicants are proposing to construct a seawall up to 37 ft. MSL which will effectively cover the exposed section of the clean sands lens and prevent collapse of the upper bluff area above the clean sands layer.

According to the Commission's staff geologist, the clean sands lens consists of a layer of sand with a limited amount of capillary tension and a very minor amount of cohesion, which causes the material to erode easily, making this clean sand layer, once exposed, susceptible to wind blown erosion and continued sloughing as the sand dries out and loses the capillary tension that initially held the materials together. Geotechnical reports associated with developments near this site have stated that gentle sea breezes and any other perturbations, such as landing birds or vibrations from low-flying helicopters, can be sufficient triggers of small- or large-volume bluff collapses, since the loss of the clean sands eliminates the support for the overlying, slightly more cemented, terrace deposits.

The presence of this clean sands layer within the bluffs along the Solana Beach shoreline has previously been identified in geotechnical reports submitted in conjunction with seawall, seacave and notch infill projects in Solana Beach (ref. CDP 6-00-9/Del Mar Beach Club, CDP #6-99-100/Presnell, et. al, #6-99-103/ Coastal Preservation

Association, #6-00-66/Pierce, Monroe, #6-02-02/Gregg, Santana, #6-02-84/Scism and #6-03-33/Surfsong; #6-04-83, Cumming, Johnson, #6-05-72/Las Brisas and 6-07-134/Caccavo, et. al). According to the Commission's staff geologist, the typical mechanism of sea cliff retreat along the Solana Beach shoreline involves the slow abrasion and undercutting of the Torrey Sandstone bedrock, which forms the sea cliff at the base of the bluffs, from wave action which becomes more pronounced in periods of storms, high surf and high tides. Other contributing factors to sea cliff retreat include fracturing, jointing, sea cave and overhang collapse and the lack of sand along the shoreline. When the lower sea cliff is undercut sufficiently, it commonly fails in blocks. The weaker terrace deposits are then unsupported, resulting in the collapse of the terrace deposits through circular failures. Such paired, episodic failures eventually result in a reduction in the steepness of the upper bluff, and the landward retreat of the bluff edge. Such retreat may threaten structures at the top of the slope. When failures of the upper bluff have sufficiently reduced the overall gradient of the upper bluff, a period of relative stability ensues, which persists until the lower bluff becomes sufficiently undercut to initiate a block failure once more, triggering a repetition of the entire process.

The mechanism of bluff retreat that occurs in conjunction with the exposure of the clean sands layer is somewhat different than the paired, episodic failure model described above. Because of the cohesionless character of the clean sands, once they are exposed, they continue to slump on an ongoing basis as a result of very small triggers such as traffic vibrations or wind erosion. Continued sloughage results in the further exposure of more clean sand, and ongoing upper bluff collapse. This cycle occurs so quickly (over months or days, rather than years) that the upper bluff may never achieve a stable angle of repose. Unless the base of the bluff is afforded shoreline protection and the clean sands lens is contained, additional bluff failures can further expose the layer of clean sands and result in a potential upper bluff failure and an immediate threat to the structures at the top of the bluff.

According to the Commission's staff geologist, the best regional estimate of historical long-term bluff retreat for Solana Beach is from a FEMA-funded study summarized in Benumof and Griggs (1999). These authors report an average long-term retreat rate of 0.27 ft/yr for the Solana Beach area over the period 1932 - 1994. Episodic erosion events such as sea cave or notch overhang collapses, and erosion related to severe winter storms, can lead to short-term bluff retreat rates well above the long-term average. These short-term retreat rates are inherently included in the estimation of the long-term retreat rate for Solana Beach and, therefore, are included in the methodology used for the in-lieu fee sand replenishment calculations.

While the existing residence is set back from the bluff edge approximately 26 feet, the slope stability analysis performed by the applicant's engineer indicates that further collapse of the upper bluff would threaten the residence at the top of the bluff. The factor of safety against sliding along the most likely slide planes were estimated to be at approximately 1.27 for the subject residence. (The factor of safety is an indicator of slope stability where a value of 1.5 is the industry-standard value for new development. In theory, failure should occur when the factor of safety drops to 1.0, and no slope should

have a factor of safety less than 1.0.) In addition, if the seacave were to collapse, the applicant's geotechnical engineer identifies the factor of safety would fall to 1.17. Following construction of the proposed 50 ft.-long seawall and seacave fill, the applicant's engineer has demonstrated that the factor of safety for the home will be at 1.5.

Thus, given the significant bluff collapses that have occurred over the recent years, the potential collapse of the seacave, the presence of the clean sands layer, the extreme erodibility of these sands once exposed, and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structures are in danger from erosion. However, there are a variety of ways in which the threat from erosion could be addressed. Under the policies of the Coastal Act, the project must eliminate or mitigate adverse effects on shoreline sand supply and minimize adverse effects on public access, recreation, and the visual quality of the shoreline.

Alternatives

The applicant's engineer has identified that removal or relocation of the residential structure is not feasible or practical because of the expense and/or the lack of available area on the lot to setback the structure so as to not be threatened by the ongoing erosion. Maintenance of the existing seacave fill alone will also not effectively protect the residence since upper bluff failures will occur as a result of the exposure of the clean sands lense. Control of groundwater and irrigation restrictions, while recommended by the applicants' representative as a way of reducing bluff sloughage, will not prevent the bluff collapses that occur at the subject site. Underpinning of the existing residence or construction of an upper bluff retention system has also been examined by the applicant, however without controlling the ongoing failures, the underpinnings would soon be exposed. In the case of the seawall, the applicant's engineer has also identified that the height of the wall at 37 ft. is the minimum size necessary to protect the toe of the bluff from marine erosion and contain the layer of clean sands which has been determined to be located between 25 ft. and 35 ft. MSL.

In summary, the exposure of the clean sands layer and expansion of the seacave presents a threat of rapid erosion and bluff collapses that must be addressed by a solution that effectively contains the clean sands and affords protection to the residence at the top of the bluff. Given the substantial amount of documented erosion on the site over the last few years, the presence of the clean sands, the extreme erodibility of these sands, the potential of seacave collapse and the low factor of safety on the subject bluffs, substantial evidence has been provided to document that the existing primary blufftop structure is in danger from erosion and that the proposed seawall, seacave fill and concrete fill behind the seawall is necessary to protect the structure at the top of the bluff from the danger of erosion. In addition, the above-described alternatives presented by the applicant do not suggest there is a less-environmentally-damaging feasible alternative. The Commission's staff geologist and coastal engineer have reviewed the applicant's geotechnical assessment of the site along with their alternatives analysis and concur with its conclusions and recommendations. Therefore, the Commission finds that the proposed seawall, seacave fill and concrete fill behind the seawall are the least environmentally damaging feasible alternative.

Sand Supply/In Lieu Mitigation Fee

Although construction of the seawall and fill of the seacave is required to protect the existing principle structure on the site, Section 30235 of the Coastal Act requires that the shoreline protection be designed to eliminate or mitigate adverse impacts on local shoreline sand supply. There are a number of adverse impacts to public resources associated with the construction of shoreline protection. The natural shoreline processes referenced in Section 30235, such as the formation and retention of sandy beaches, can be significantly altered by construction of a seawall, since bluff retreat is one of several ways that beach area and beach quality sand is added to the shoreline. This retreat is a natural process resulting from many different factors such as erosion by wave action causing cave formation, enlargement and eventual collapse, saturation of the bluff soil from ground water causing the bluff to slough off and natural bluff deterioration. When a seawall is constructed on the beach at the toe of the bluff, it directly impedes these natural processes.

Some of the effects of a shoreline protective structure on the beach such as scour, end effects and modification to the beach profile are temporary or difficult to distinguish from all the other actions which modify the shoreline. Seawalls also have non-quantifiable effects to the character of the shoreline and visual quality. However, some of the effects which a structure may have on natural shoreline processes can be quantified. Three of the effects from a shoreline protective device which can be quantified are: 1) loss of the beach area on which the structure is located; 2) the long-term loss of beach which will result when the back beach location is fixed on an eroding shoreline; and 3) the amount of material which would have been supplied to the beach if the back beach or bluff were to erode naturally.

Loss of beach material and loss of beach area are two separate concerns. A beach is the result of both sandy material and a physical area between the water and the back beach. Thus, beach area is not simply a factor of the quantity of sandy beach material. In Solana Beach, the shoreline is a shallow bedrock layer covered by a thin veneer of sand. The bedrock layer provides an area for collection of sandy material. The sand material is important to the overall beach experience, but even without the sand, the bedrock layer provides an area for coastal access between the coastal bluff and the ocean. The loss of beach material that will be a direct result of this project can be balanced or mitigated by obtaining similar quality and quantity of sediment from outside the littoral cell and adding this sediment to the littoral cell. There are sources of beach quality sediment that can be drawn upon to obtain new sediment for the littoral cell. Unfortunately there is not a source of extra beach land that can be used to add new land area to the littoral cell. Beach nourishment is a method that allows us to shift the shore profile seaward and create a new area of dry beach. This will not create new coastal land, but will provide many of the same benefits that will be lost when the beach area is covered by a seawall or "lost" through passive erosion when the back bluff location is fixed.

The volume of sand that is calculated by the Beach Sand In-lieu Fee Mitigation Program currently utilized by the Commission is the quantification of the direct impacts to the existing recreational beach from the proposed seawall project. The mitigation program that has been proposed by the applicant and recommended as a special condition for this project includes quantification of the impacts from wall and infill encroachments, denial of sand to the littoral cell and passive erosion, as discussed herein. The purpose of the Beach Sand In-Lieu Fee Mitigation Program is to mitigate for the small, persistent loss of recreational beach, such as will result from the proposed project, by placing funds into a program that will be used for placement of sand on the beach in this area. This Beach Sand In-Lieu Fee Mitigation Program is administered by the San Diego Association of Governments (SANDAG) and has been in place in San Diego County for many years.

It is possible to estimate the volume of sand needed to create a given area of dry beach through beach nourishment. The proposed project will result in a loss of 100 sq. ft. of beach due to the long-term physical encroachment of the seawall (based on a 50-foot length and 2-foot width). In addition, there will be 270 sq. ft. of beach area that will no longer be formed because the back of the beach will be fixed (50 ft. x .27 [erosion rate] x 20 [estimated life of the seawall in years]). This 370 sq. ft. of beach area (100 + 270) cannot be directly replaced by land, but a comparable area can be built through the one-time placement of 333 cubic yards of sand on the beach seaward of the seawall as beach nourishment. Further explanation of this calculation is provided below. Thus, the impact of the seawall on beach area can be quantified as 333 cubic yards of sand. In addition to the impact on beach area, there is the amount of sand material in the bluff that would have been added to the beach if natural erosion had been allowed to continue at the site, which is calculated to be a volume of 589.53 cubic yards. Therefore, the amount of sand necessary to mitigate for the impacts associated with the seawall construction is estimated to be 922.53 cubic yards (333 cu. yds. + 589.53 cu. yds.). This estimate is only a "rough approximation" of the impact of the seawall on beach area because a one-time placement of this volume of sand cannot result in creation of beach area over the long term.

Special Condition #2 reflects the applicant's proposal to deposit an in-lieu fee to fund beach sand replenishment of 922.53 cubic yards of sand, as mitigation for impacts of the proposed shoreline protective device on beach sand supply and shoreline processes. In the case of the proposed project, the fee is \$17,297.44, based on 922.53 cubic yards of sand multiplied by the cost of obtaining and placing a cubic yard of sand on the beach, as proposed by the applicants' engineer, at \$18.75 per cu. yd.

The following is the methodology used by the Commission in developing the in-lieu fee amount. The methodology uses site-specific information provided by the applicant as well as estimates, derived from region-specific criteria, of both the loss of beach material and beach area which could occur over the life of the structure, and of the cost to purchase an equivalent amount of beach quality material and to deliver this material to beaches in the project vicinity.

The following is a description of the methodology:

Fee = (Volume of sand for mitigation) x (unit cost to buy and deliver sand)

$$M = V_t \times C$$

where

M = Mitigation Fee

V_t = Total volume of sand required to replace losses due to the structure, through reduction in material from the bluff, reduction in nearshore area and loss of available beach area (cubic yards). Derived from calculations provided below.

C = Cost, per cubic yard of sand, of purchasing and transporting beach quality material to the project vicinity (\$ per cubic yard). Derived from the average of three written estimates from sand supply companies within the project vicinity that would be capable of transporting beach quality material to the subject beach, and placing it on the beach or in the near shore area.

$$V_t = V_b + V_w + V_e$$

where

V_b = Volume of beach material that would have been supplied to the beach if natural erosion continued, based on the long-term regional bluff retreat rate, design life of the structure, percent of beach quality material in the bluff, and bluff geometry (cubic yards). This is equivalent to the long-term reduction in the supply of bluff material to the beach resulting from the structure.

V_w = Volume of sand necessary to replace the beach area that would have been created by the natural landward migration of the beach profile without the seawall, based on the long-term regional bluff retreat rate, and beach and nearshore profiles (cubic yards)

V_e = Volume of sand necessary to replace the area of beach lost due to encroachment by the seawall; based on the seawall design and beach and nearshore profiles (cubic yards)

$$V_b = (S \times W \times L/27) \times [(R \ h_s) + (h_u/2 \times (R + (R_{cu} - R_{cs})))]$$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated by the applicants' representative to be 0.27 ft./year. The use of any alternative retreat rates must be documented by the applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

W = Width of property to be armored (ft.)

h = Total height of armored bluff (ft.)

S = Fraction of beach quality material in the bluff material, based on analysis of bluff material to be provided by the applicant

h_s = Height of the seawall from the base to the top (ft)

h_u = Height of the unprotected upper bluff, from the top of the seawall to the crest of the bluff (ft)

R_{cu} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming no seawall were installed (ft/yr). This value can be assumed to be the same as R unless the applicant provides site-specific geotechnical information supporting a different value.

R_{cs} = Predicted rate of retreat of the crest of the bluff, during the period that the seawall would be in place, assuming the seawall has been installed (ft/yr). This value will be assumed to be zero unless the

applicant provides site-specific geotechnical information supporting a different value.

NOTE: For conditions where the upper bluff retreat will closely follow the lower bluff, this volume will approach a volume of material equal to the height of the total bluff, the width of the property and a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed. For conditions where the upper bluff has retreated significantly and would not be expected to retreat further during the time that the seawall is in place, this volume would approach the volume of material immediately behind the seawall, with a thickness equal to the total bluff retreat that would have occurred if the seawall had not been constructed.

$$V_w = R \times L \times v \times W$$

where

R = Long-term regional bluff retreat rate (ft./yr.), based on historic erosion, erosion trends, aerial photographs, land surveys, or other accepted techniques. For the Solana Beach area, this regional retreat has been estimated by the applicants' representative to be 0.27 ft./year. The use of any alternative retreat rates must be documented by the applicant and should be the same as the predicted retreat rate used to estimate the need for shoreline armoring.

L = Design life of armoring without maintenance (yr.) If maintenance is proposed and extends the life of the seawall beyond the initial estimated design life, a revised fee shall be determined through the coastal development permit process.

v = Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall; based on the vertical distance from the top of the beach berm to the seaward limit of reversible sediment movement (cubic yards/ft of width and ft. of retreat). The value of v is often taken to be 1 cubic yard per square foot of beach. In the report, "Oceanside Littoral Cell Preliminary Sediment Budget Report" (December 1987, part of the Coast of California Storm and Tide Wave Study, Document #87-4), a value for v of 0.9 cubic yards/square foot was suggested. If a vertical distance of 40 feet is used for the range of reversible sediment movement, v would have a value of 1.5

cubic yards/square foot (40 feet x 1 foot x 1 foot / 27 cubic feet per cubic yard). These different approaches yield a range of values for v from 0.9 to 1.5 cubic yards per square foot. The value for v would be valid for a region, and would not vary from one property to the adjoining one. Until further technical information is available for a more exact value of v , any value within the range of 0.9 to 1.5 cubic yards per square foot could be used by the applicant without additional documentation. Values below or above this range would require additional technical support.

$W =$ Width of property to be armored (ft.)

$$V_e = E \times W \times v$$

where

$E =$ Encroachment by seawall, measured from the toe of the bluff or back beach (ft.)

$W =$ Width of property to be armored (ft.)

$v =$ Volume of material required, per unit width of beach, to replace or reestablish one foot of beach seaward of the seawall, as described above;

The San Diego Association of Governments (SANDAG) has adopted the Shoreline Preservation Strategy for the San Diego region and is currently working on techniques toward its implementation. The Strategy considers a full range of shoreline management tactics, but emphasizes beach replenishment to preserve and enhance the environmental quality, recreational capacity, and property protection benefits of the region's shoreline. Funding from a variety of sources will be required to implement the beach replenishment and maintenance programs identified in the SANDAG Strategy. In this particular case, SANDAG has agreed to administer a program which would identify projects which may be appropriate for support from the beach sand replenishment fund, through input from the Shoreline Preservation Working Group which is made up of representatives from all the coastal jurisdictions in San Diego County. The Shoreline Preservation Working Group is currently monitoring several large scale projects, both in and out of the coastal zone, they term "opportunistic sand projects", that will generate large quantities of beach quality material suitable for replenishing the region's beaches. The purpose of the account is to aid in the restoration of the beaches within San Diego County. One means to do this would be to provide funds necessary to get such "opportunistic" sources of sand to the shoreline.

The applicant is being required to pay a fee in-lieu of directly depositing the sand on the beach, because the benefit/cost ratio of such an approach would be too low. Many of the

adverse effects of the seawall on sand supply will occur gradually. In addition, the adverse effects impact the entire littoral cell but to different degrees in different locations throughout the cell (based upon wave action, submarine canyons, etc.) Therefore, mitigation of the adverse effects on sand supply is most effective if it is part of a larger project that can take advantage of the economies of scale and result in quantities of sand at appropriate locations in the affected littoral cell in which it is located. The funds will be used only to implement projects which benefit the area where the fee was derived, and provide sand to the region's beaches, not to fund operations, maintenance or planning studies. Such a fund will aid in the long-term goal of increasing the sand supply and thereby reduce the need for additional armoring of the shoreline in the future. The fund also will insure that there will be sandy beach available for recreational uses. The methodology, as proposed, ensures that the fee is roughly proportional to the impacts to sand supply attributable to the proposed seawall. The methodology provides a means to quantify the sand and beach area that would be available for public use, were it not for the presence of the seawall.

The above-described impacts on the beach and sand supply have previously been found to result from seawalls in other areas of North County. In March of 1993, the Commission approved CDP #6-93-85/Auerbach, et al for the construction of a seawall fronting six non-continuous properties located in the City of Encinitas north of the subject site. In its finding for approval, the Commission found the proposed shoreline protection would have specific adverse impacts on the beach and sand supply and required mitigation for such impacts as a condition of approval. The Commission made a similar finding for several other seawall developments within San Diego County including an August 1999 approval (ref. CDP No. 6-99-100/Presnell, et. al) for the approximately 352-foot-long seawall project located approximately ¼ mile south of the subject development and a March 2003 approval (ref. CDP No. 6-02-84/Scism) located 2 lots south of the subject site. (Also ref. CDP Nos. 6-93-36-G/Clayton, 6-93-131/Richards, et al, 6-93-136/Favero, 6-95-66/Hann, 6-98-39/Denver/Canter and 6-99-41/Bradley; 6-00-138/Kinzel, Greenberg; 6-02-02/Gregg, Santina and 6-03-33/Surfsong, 6-04-83,Cumming, Johnson, 6-05-72 Las Brisas and 6-07-134/Caccavo, et. al).

The proposed seawall will be constructed so as to connect to an existing and similarly designed seawall on its south side. On its north side, however, there is not currently a seawall although one has recently been approved for development (CDP #6-07-134/Caccavo, et. al). In the event the neighboring seawall to the north is not constructed, the subject seawall could have adverse impacts to the unprotected bluffs on its north side.

In addition to the adverse impacts the seawall will have on the beach as detailed above, the Commission finds that the proposed seawall could also have adverse impacts on adjacent unprotected properties caused by wave reflection, which leads to accelerated erosion. Numerous studies have indicated that when continuous protection is not provided, unprotected adjacent properties experience a greater retreat rate than would occur if the protective device were not present. This is due primarily to wave reflection off the protective structure and from increased turbulence at the terminus of the seawall. According to James F. Tait and Gary B. Griggs in Beach Response to the Presence of a

Seawall (A Comparison of Field Observations) "[t]he most prominent example of lasting impacts of seawalls on the shore is the creation of end scour via updrift sand impoundment and downdrift wave reflection. Such end scour exposes the back beach, bluff, or dune areas to higher swash energies and wave erosion." As such, as the base of the bluff continues to erode on the unprotected adjacent properties, failure of the bluff is likely. Thus, future failures could "spill over" onto other adjacent unprotected properties, prompting requests for much more substantial and environmentally damaging seawalls to protect the residences. This then starts a "domino" effect of individual requests for protection.

According to information contained in the Planners Handbook (dated March 1993), which is included as Technical Appendix III of the Shoreline Preservation Strategy adopted by the San Diego Association of Governments (SANDAG) on October 10, 1993, "[a] longer return wall will increase the magnitude of the reflected wave energy. On a coast where the shoreline is retreating, there will be strong incentives to extend the length of the return wall landward as adjacent property is eroded, thereby increasing the return wall, and its effects on neighboring property, with time."

The plans for the subject seawall submitted by the applicant do not address the design of the north and south ends of the seawall in terms of how the design will mitigate these known effects. Therefore, Special Condition #1 has been attached which requires the submission of revised final plans that reflect the end design of the proposed seawall. The condition requires that the returns incorporate a design to gradually blend into the adjacent natural bluffs which will help to reduce the turbulence at the end of the wall or, if a seawall is ultimately constructed on the north side of the project site, incorporation of a design to blend with the adjacent northern seawall.

If the proposed wall were damaged in the future (e.g. as a result of wave action, storms, etc.) it could threaten the stability of the site, which could lead to the need for more bluff alteration. In addition, damage to the seawall could adversely affect the beach by resulting in debris on the beach and/or creating a hazard to the public using the beach. In addition, excessive wear of the seawall could result in the loss of or damage to the color or texture of the seawall resulting in adverse visual impacts (discussed in more detail in a subsequent section of this report). Therefore, in order to find the proposed seawall consistent with the Coastal Act, the Commission finds that the condition of the seawall, seacave fill and concrete backfill behind the seawall in its approved state must be maintained for the life of the seawall. Further, in order to ensure that the permittee and the Commission know when repairs or maintenance are required, the permittee must monitor the condition of the seawall annually, for three years and at three-year intervals after that, unless a major storm event occurs. The monitoring will ensure that the permittee and the Commission are aware of any damage to or weathering of the seawall and can determine whether repairs or other actions are necessary to maintain the seawall in its approved state.

Therefore, Special Condition #4 requires the applicant to submit a monitoring report which evaluates the condition and performance of the seawall, seacave fill and concrete backfill behind the seawall and overall site stability, and submit an annual report with

recommendations, if any, for necessary maintenance, repair, changes or modifications to the project. In addition, the condition requires the applicant to perform the necessary repairs through the coastal development permit process.

Special Condition #7 requires that feasible alternative measures must be implemented on the applicant's blufftop property in the future, should additional stabilization be required, which would avoid additional alteration of the natural landform of the public beach or coastal bluffs, but would reduce risk to the principle residential structures and provide reasonable use of the property. The condition will ensure that future property owners will be aware that any future proposals for additional shoreline protection, such as upper bluff stabilization, will require an alternatives analysis similar to one required for the subject project. If there are feasible alternatives to shoreline protection that would have less impact on visual quality, sand supply, or public access, the Commission (or, where applicable, the City of Solana Beach after the effective certification of its Local Coastal Program) will require implementation of those alternatives. The condition also states that no shore or bluff protection shall be permitted for ancillary improvements located within the blufftop setback area. Through this condition, the property owner is required to acknowledge the risks inherent in the subject property and that there are limits to the structural protective measures that may be permitted on the adjacent public property in order to protect the existing development in its current location.

Special Condition #1 requires the applicant to submit final plans for the project indicating that the seawall conforms to the bluff contours, details the design of any needed return wall, details of the seacave fill and concrete backfill behind the seawall and that demonstrate that any existing irrigation systems on the blufftop have been removed, as these would impact the ability of the seawall and other shoreline protection devices to adequately stabilize the site. Submission of final plans will ensure that overall site conditions which could adversely impact the stability of the bluff have been addressed.

Special Condition #8 notifies the applicants that they are responsible for maintenance of the herein approved shore protection. The condition also indicates that, should it be determined that maintenance of the proposed structures are required in the future, including maintenance of the color and texture, the applicant shall contact the Commission to determine if permits are required.

To assure the proposed shore protection has been constructed properly, Special Condition #6 has been proposed. This condition requires that, within 60 days of completion of the project, as built-plans and certification by a registered civil engineer be submitted that verifies the proposed seawall has been constructed in accordance with the approved plans.

Special Conditions #9 requires the applicants to submit a copy of any required permits from other local, state or federal agencies to ensure that no additional requirements are placed on the applicants that could require an amendment to this permit.

Also, due to the inherent risk of shoreline development, Special Condition #12 requires the applicants to waive liability and indemnify the Commission against damages that

might result from the proposed shoreline devices or their construction. The risks of the proposed development include that the proposed shoreline devices will not protect against damage to the residences from bluff failure and erosion. In addition, the structures themselves may cause damage either to the applicants' residence or to neighboring properties by increasing erosion of the bluffs. Such damage may also result from wave action that damages the seawall. Although the Commission has sought to minimize these risks, the risks cannot be eliminated entirely. Given that the applicants have chosen to construct the proposed shoreline devices despite these risks, the applicants must assume the risks. Special Condition #15 requires the applicant to record a deed restriction imposing the conditions of this permit as covenants, conditions and restrictions on the use and enjoyment of the property. Only as conditioned can the proposed project be found consistent with Sections 30235 and 30253 of the Coastal Act.

In summary, the applicants have documented that the existing blufftop primary residential structure is in danger from erosion and subsequent bluff collapse and that the proposed project is necessary to protect the existing structure. As conditioned, there are no other less damaging alternatives available to reduce the risk from bluff erosion. Thus, the Commission is required to approve the proposed protection for the residential structure. Since the proposed seawall will contribute to erosion and geologic instability over time and also deplete sand supply, occupy public beach and fix the back of the beach, Special Condition #2 requires the applicants to pay an in-lieu mitigation fee to offset this impact. Therefore, as conditioned, the Commission finds that the proposed seawall is consistent with Sections 30235 and 30253 of the Coastal Act.

3. Public Access/Recreation. In addition to the adverse impacts on local sand supply, shoreline protective devices also have significant adverse impacts to public access and recreation. Coastal Act Section 30604(c) requires that every coastal development permit issued for any development between the nearest public road and the sea "shall include a specific finding that the development is in conformity with the public access and public recreation policies of [Coastal Act] Chapter 3." The proposed project is located seaward of the first through public road, on the beach. Coastal Act Sections 30210 through 30213, as well as Sections 30220 and 30221 specifically protect public access and recreation, and state:

Section 30210: In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30211: Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.

Section 30212(a): Public access from the nearest public roadway to the shoreline and along the coast shall be provided in new development projects...

Section 30213: Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. ...

Section 30220: Coastal areas suited for water-oriented recreational activities that cannot readily be provided at inland water areas shall be protected for such uses.

Section 30221: Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.

Coastal Act Section 30240(b) also protects parks and recreation areas such as Fletcher Cove and Tide Beach Parks. Section 30240(b) states:

Section 30240(b). Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

The project site is located on a public beach utilized by local residents and visitors for a variety of recreational activities such as swimming, surfing, jogging, walking, surf fishing, beachcombing and sunbathing. The site is located about 300 ft. south of the Tide Beach Park public access stairway and approximately ½ mile north of Fletcher Cove, the City's main beach access location. The proposed seawall and seacave fill will be constructed on sandy beach area that is currently available to the public and will have both immediate and long-term adverse impacts on public access and recreational opportunities.

Although the proposed seawall has been designed to be as narrow as feasible, it will project approximately 2 feet seaward of the toe of the bluff. In addition, although the seaward encroachment of the wall appears at first glance to be minimal, the beach along this area of the coast is narrow and at high tides and winter beach profiles, the public may be forced to walk virtually at the toe of the bluff or the area could be impassable. As such, an encroachment of any amount, including 2 feet for a length of 50 feet onto the sandy beach, reduces the small beach area available for public use and is therefore a significant adverse impact. This is particularly true given the existing beach profiles and relatively narrow beach where access is sometimes only available at low tides. In addition, however, were it not for the seawall, the seaward face of the bluff would naturally recede making additional beach area available for public use. During the 20 year life of the seawall, as the beach area available to the public is reduced, dry sandy beach will become less available seaward of the seawall such that beachgoers will not want to sit or lay a towel in this area. In addition, over time as the surrounding unprotected bluffs recede, the seawall structure, along with others constructed to the south, will likely impede or completely eliminate public access to the beach south of Tide Beach Park at the subject site.

As explained in Section 2 of this report, the proposed seawall will result in the encroachment and the fixing of the back of the beach, which will result in the immediate loss of 100 square feet of beach and after 20 years, with no recession of the bluff, will result in the loss of a total approximately 370 square feet of public beach. The sand that would have reached the beach were it not for the proposed seawall is generally mitigated by the applicant's proposal to pay an in-lieu fee for the purchase of an equal amount of sand for future placement. However, the loss of this approximately 370 sq. ft. of recreational area is not mitigated by the one-time placement of sand since that area will not be available for public use (or placement of sand) over the estimated 20 year life of the seawall. Since any loss of public beach area will significantly affect public access and recreational opportunities along the beach adjacent to Tide Beach Park, additional mitigation is required.

Development along the shoreline which may burden public access in several respects has been approved by the Commission. However, when impacts can't be avoided and have been reduced to the maximum extent feasible, mitigation for any remaining adverse impacts of the development on access and public resources is always required. The Commission's permit history reflects the experience that development can physically impede public access directly, through construction adjacent to the mean high tide line in areas of narrow beaches, or through the placement or construction of protective devices seawalls, rip-rap, and revetments. Since physical impediments adversely impact public access and create private benefit for the property owners, the Commission has found in such cases (in permit findings of CDP #4-87-161, Pierce Family Trust and Morgan; CDP #6-87-371, Van Buskirk; CDP #5-87-576/Miser and Cooper; CDP 3-02-024/Ocean Harbor House; 6-05-72/ Las Brisas and 6-07-134/Caccavo, et. al) that a public benefit must arise through mitigation conditions in order that the development will be consistent with the access policies of the Coastal Act, as stated in Sections 30210, 30211, and 30212.

Appropriate mitigation for the subject development would be creation of additional public beach area in close proximity to the impacted beach area. However, all of the beach areas in Solana Beach are already in public ownership such that there is not private beach area available for purchase. In addition to the more qualitative social benefits of beaches (recreational, aesthetic, habitat values, etc.), beaches provide significant direct and indirect revenues to local economies, the state, and the nation. There is little doubt that the loss of 370 sq. ft. of sandy beach in an urban area such as Solana Beach represents a significant impact to public access and recreation, including a loss of the social and economic value of this recreational opportunity. The question becomes how to adequately mitigate for these qualitative impacts on public recreational beach use and in particular, how to determine a reasonable value of this impact to serve as a basis for mitigation.

In the past ten to fifteen years, the Commission has approved the construction of shoreline devices in San Diego County when they are necessary to protect an existing primary structure and when mitigation is provided according to a formula that the Commission developed to address some of the more easily quantifiable effects on local

sand supply, as required by Section 30235 of the Coastal Act. In each of those decisions, the Commission recognized that the mitigation in the form of an in-lieu fee paid for the purchase of sand to offset the sand lost by the shoreline structure, provided some, but not all mitigation, associated with the adverse impacts of shoreline devices.

In recent years, the Commission has sought additional ways to quantify the adverse impacts to public access and recreation that result from shoreline protective devices and, thereby, develop more appropriate mitigation for those impacts. However, except in a few cases, the Commission has been unable to adequately quantify those impacts and thus has been unable to accurately evaluate the economic loss to public access/recreation associated with necessary shoreline protection projects.

In 2005, the Commission contracted with Dr. Phillip King, Chair of the Economics Department at San Francisco State University, to perform an economic analysis of the loss of recreational values associated with a seawall located adjacent to Fletcher Cove Beach Park approximately ½ mile south of the subject site (Ref. CDP #6-04-92/Las Brisas). Since that time, Commission staff have attempted to use Dr. King's study as a basis for evaluating the subject site, but because the character of the beach at Fletcher Cove is different in terms of accessibility, number of users and width of beach, and several other variables, staff has concluded Dr. King's study cannot be used as basis for determining impacts to the subject site. For instance, Dr. King estimated the number of beach users at Fletcher Cove on what he described as a "flawed" parking study for the Fletcher Cove parking lot. He also identified that most the beachgoers place their towels no further than 150 ft. from the Fletcher Cove access ramp. Since these numbers are the only known figures for beach attendance in Solana Beach and are based on a "flawed" parking study and, according to his report, those beach users generally do not go beyond 150 ft. from Fletcher Cove, his report was deemed insufficient for use on the subject seawall project where most users likely use the Tide Beach public access stairway. In addition, the City does not have attendance records for beach use at Tide Beach Park or elsewhere along the shoreline.

However, as a filing requirement for seawall applications, applicants have recently been asked to address the adverse impacts of shoreline devices on public access and recreation opportunities and to consider ways those impacts could be mitigated. Mitigation might be in the form of particular public access or recreational improvement to be located in close proximity to the project or might involve an in-lieu fee to be used sometime in the future for a public access/recreation improvement. To address this issue, the subject applicants are proposing to utilize an in-lieu fee program recently adopted by the City of Solana Beach that addresses impacts of shoreline devices on public access/recreation and on sand supply which, in the case of the proposed 50 ft.-long seawall, will result in the initial payment of \$50,000.00 over an approximately 73 year period (\$1000.00 per lineal foot). In addition, the fee is subject to modification following completion of a City funded study to determine more precisely the economic loss associated with the construction of protective devices along the Solana Beach shoreline. According to the City, the economic study is estimated to be completed in late 2009.

In June of 2007, the City of Solana Beach adopted an interim in-lieu fee program to mitigate the adverse impacts associated with shoreline devices (Ref. Resolution 2007-042, City of Solana Beach). The program has been designed as “interim” in that until the City completes an economic study that more precisely determines the economic costs, the ultimate costs to the property are unknown. As such, the City’s program requires that a \$1,000.00 per lineal foot fee be assessed in the interim and requires an applicant to agree to modifications to the fee once the economic study is complete and a more site specific fee is assessed. In the case of the proposed development, the City approved a Conditional Use Permit and as a condition of approval of that permit, required the applicant to pay \$1000.00 per lineal foot of the shoreline device (seawall) so as to mitigate the adverse impacts to public access, recreational use and sand supply resulting from the seawall construction. In addition the City approval required the applicant to agree to a future modification of that fee following the approval of the City’s economic study. According to the City’s program, the monies collected through the mitigation program will be directed for City use for public access and recreational projects. The applicant has proposed payment into the City’s program as mitigation for adverse impacts of the proposed development on public access and recreation.

As previously identified, the proposed seawall and seacave fill will have adverse impacts to public access and recreational opportunities which must be mitigated. Since the site specific information is not currently available to assess those impacts, but is anticipated to be available following completion of the City’s economic study, in this particular case, the Commission is accepting the applicant’s proposal to mitigate the identified adverse impacts on public access and recreation associated with the proposed 50- ft. long seawall project through the initial payment of \$50,000.00 to the City of Solana Beach and requiring that the applicant provide the Commission with evidence that this fee has actually been paid.

The City of Solana Beach has submitted a draft Local Coastal Program (LCP) Land Use Plan to the Commission which is anticipated to be reviewed by the Commission sometime later in 2009. The City’s mitigation program to address loss of sand and public access/recreation is included as part of the LCP submittal, which the Commission will evaluate when it reviews the City’s draft LCP. The Commission’s acceptance, in this case, of the applicant’s proposed mitigation for the loss of public access and recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City’s mitigation plan or of the City’s economic study, as that plan is not in front of the Commission for evaluation at this time. Instead, due to the lack of sufficient information concerning the economic loss to public access/recreation from the proposed seawall, the Commission agrees to accept the applicant’s proposal, and requires it to pay the City’s interim fee, until such time that the City completes its economic study and a more accurate economic loss evaluation can be determined. In order to ensure that any subsequent modification of this mitigation fee is consistent with the Chapter 3 policies of the Coastal Act, the Commission imposes Special Condition #3, requiring the applicants to submit an application for an amendment to this permit to the Commission if the final mitigation fee imposed by the City is different than the proposed \$50,000 interim fee. The appropriateness of any reduction in the fee amount will be addressed by

the Commission at that time to assure compliance with the Coastal Act and the City's LCP if certified.

It is anticipated that the City's economic study will provide information such as number of beach users throughout the year, what the economic value of a "day at the beach" is, quantification of beach area lost over time and other information which can assist the Commission to more accurately estimate the economic loss associated with seawall devices. However, while the Commission is accepting payment into the City's program with this application, the Commission has not yet had the opportunity to review and address the City's mitigation program as a whole in the context of the LCP and as such, makes it clear that in approving the applicant's proposed mitigation, the Commission is not approving the City's interim ordinance or the findings of the as yet unfinished economic study.

This stretch of beach has historically been used by the public for access and recreation purposes. Special Condition #11 acknowledges that the issuance of this permit does not waive the public rights that may exist on the property. The seawall may be located on State Lands property, and as such, Special Condition #10 requires the applicant to obtain any necessary permits or permission from the State Lands Commission to perform the work.

In addition, the use of the beach or public parking areas for staging of construction materials and equipment can also impact the public's ability to gain access to the beach. While the applicant has not submitted a construction staging and material storage plan for the subject development, it is likely that beach access to the site will occur via Fletcher Cove which is located approximately ½ mile south of the subject site. Because the applicant has not identified the location of the staging and storage area, Special Condition #5 has been attached to mitigate the impact on public parking areas and public access. Special Condition #5 prohibits the applicant from storing vehicles on the beach overnight, using any public parking spaces within Fletcher Cove overnight for staging and storage of equipment, and prohibits washing or cleaning construction equipment on the beach or in the parking lot. The condition also prohibits construction on the beach during weekends and holidays and during the summer months (between Memorial Day to Labor Day) of any year.

With Special Conditions that require mitigation for the adverse impacts to public access and recreation, maximum public access during construction and authorization from the State Lands Commission, impacts to the public will be minimized to the greatest extent feasible. Thus, as conditioned, the Commission finds the project consistent with the public access and recreation policies of the Coastal Act.

4. Visual Resources/Alteration of Natural Landforms. Section 30240 (b) of the Coastal Act is applicable and states:

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which

would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

In addition, Section 30251 of the Coastal Act states, in part:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas . . .

As stated above, the proposed development will occur on the face of a coastal bluff and on the public beach. The bluff face on either side of the proposed seawall remains in its natural state although a seawall of similar size and design is adjacent to the south side of the proposed seawall and another similarly sized seawall has been approved for construction adjacent to the north side of the proposed seawall. Once the subject seawall and the recently approved seawall are completed and connected to other existing seawalls, the resulting structures will measure approximately 325 feet in length. If not designed to match the other adjacent seawalls and natural existing bluff face, the proposed 50 ft.-long, 37 ft.-high seawall has the potential for adverse impacts on visual resources of the shoreline. Following construction, the natural appearance of the lower bluff will be substantially altered. To mitigate the visual impacts of the proposed seawall, the applicant proposes to color and texture the seawall and vegetate the reconstructed bluff. The visual treatment proposed is similar to the visual treatment approved by the Commission in recent years for shoreline devices along the Solana Beach shoreline. (ref. CDP #6-02-84/Scism; 6-02-02/Gregg, Santina; 6-03-33/Surfsong; 6-04-83/Johnson, Cumming; 6-07-134/Caccavo, et. al.). The technology in design of seawalls has improved dramatically over the last two decades. Today seawalls typically involve sculpted and colored concrete that upon completion closely mimic that natural surface of the lower bluff face. In the case of the subject seawall request, the specific design methods for coloring and texturing the seawall have not as yet been submitted. It is also not clear whether the concrete backfill is also proposed to be colored and textured to closely match the natural bluff. Therefore, Special Condition #1 requires the submittal of detailed plans, color samples, and information on construction methods and technology for the surface treatment of the seawall and backfill structures.

In addition, to address other potential adverse visual impacts, Special Conditions Nos. 4 and 8 have been attached which require the applicant to monitor and maintain the proposed seawall and concrete backfill in its approved state. In this way, the Commission can be assured that the proposed structures will be maintained so as to effectively mitigate their visual prominence.

Therefore, as conditioned, the Commission finds that potential visual impacts associated with the proposed development have been reduced to the maximum extent feasible and the proposed development will include measures to prevent impacts that would

significantly degrade the adjacent park and recreation area (beach area). Thus, the project can be found consistent with Sections 30240 and 30251 of the Coastal Act.

5. Protection of Ocean Waters/BMP's. Section 30230, 30231 and 30232 of the Coastal Act require that new development be designed so that ocean waters and the marine environment be protected from polluted runoff and accidental spill of hazardous substances:

Section 30230

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Section 30231

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30232

Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.

The construction of the proposed seawall will occur on the public beach within a few feet of ocean waters. Construction activities will only occur at low tides when access along the beach is available. However, at high tides ocean waters will extend up to the face of the seawall such that the seawall at times will be subject to wave action. The method of construction of the seawall involves the multiple application of shotcrete that is sprayed (at high pressure) over the face of the seawall structure. This shotcrete material will eventually be sculpted and colored to closely match the appearance of the natural bluffs. According to the engineers for similar seawall projects in Solana Beach, approximately 10 to 15% of this shotcrete (concrete) material rebounds off the structure onto the beach as it is being applied. Because the material is wet, the applicant's representative indicates it cannot be picked up until it hardens. The Commission is aware that in previously

constructed seawalls along the Solana Beach shoreline, this shotcrete “rebound” has not been removed before the ocean waters rise and mix with the wet shotcrete material. After the return of low tides, any remaining hardened shotcrete is then picked up by the construction crews and removed from the beach. According to the Commission’s water quality division and staff of the State Regional Water Quality Control Board, San Diego Region, the mixing of this rebound shotcrete with ocean waters is a violation of the State Water Quality Act since it would involve the unauthorized discharge of a pollutant into ocean waters.

Along other sections of the coast, shotcrete is applied without the associated rebound problems. Contractors place tarps on the beach to collect material that drops from the wall. They also use backdrops or drapes along the face of the bluff to contain splatter and rebound and prevent scatter of shotcrete material all around the beach. These and other techniques are possible ways to control shotcrete debris and prevent discharge into the marine environment.

Special Condition #5 is attached which requires that during the construction of the project, “the permittee shall not store any construction materials or waste where it will be or could potentially be subject to wave erosion and dispersion”. This is a standard requirement for all seawall projects approved by the Commission. However, based on information supplied by the applicant’s engineer, this special condition has not effectively served to prohibit the contamination of ocean waters by rebounded shotcrete. To assure that the subject development will not result in the pollution of the ocean waters, Special Condition #13 has been attached. Special Condition #13 requires the applicant to submit a Polluted Runoff Control Plan that incorporates structural and nonstructural Best Management Practices (BMPs), for Executive Director approval, for the construction of the proposed seawall. Construction methods must be devised to assure this rebound shotcrete material does not mix with or pollute ocean waters. With appropriate BMPs, the potential for this polluted material from the site making its way into the ocean will be eliminated. Therefore, as conditioned, the Commission finds the proposed development consistent with the marine and water quality protection policies of the Coastal Act.

6. Local Coastal Planning. Section 30604(a) also requires that a coastal development permit shall be issued only if the Commission finds that the permitted development will not prejudice the ability of the local government to prepare a Local Coastal Program (LCP) in conformity with the provisions of Chapter 3 of the Coastal Act. In this case, such a finding can be made.

The subject site was previously in the County of San Diego jurisdiction, but is now within the boundaries of the City of Solana Beach. The City is preparing and plans to submit a new LCP for the area to the Commission for review. Because of the incorporation of the City, the County of San Diego’s LCP never became effectively certified. However, the issues regarding protection of coastal resources in the area have been addressed by the Commission in its review of the San Diego County LUP and Implementing Ordinances.

The City of Solana Beach has prepared a draft LCP. In preparation of its LCP, the City of Solana Beach is faced with many of the same issues as the City of Encinitas, located immediately north of Solana Beach, whose LCP was certified by the Commission in March 1995. The City of Encinitas' LCP includes the intent to prepare a comprehensive plan to address the coastal bluff recession and shoreline erosion problems in the City. The plan will include at a minimum, bluff top setback requirements for new development and redevelopment; alternatives to shore/bluff protection such as beach sand replenishment, removal of threatened portions of a residence or the entire residence or underpinning existing structures; addressing bluff stability and the need for protective measures over the entire bluff (lower, mid and upper); impacts of shoreline structures on beach and sand area as well as mitigation for such impacts; impacts for groundwater and irrigation on bluff stability and visual impacts of necessary/required protective structures.

The City of Solana Beach LCP should also address these items in the context of a comprehensive approach to management of shoreline resources. As shoreline erosion along the coast rarely affects just one individual property, it is imperative that a regional solution to the shoreline erosion problem be addressed and solutions developed to protect the beaches. Combined with the decrease of sand supply from coastal rivers and creeks, armoring of the coast will continue to erode beaches without their being replenished. This will, in turn, decrease the public's ability to access and recreate on the shoreline.

As previously described, the draft LCP prepared by the City includes provisions for mitigating the adverse impacts of seawalls on public access, recreational use and sand supply. The Commission has not yet reviewed or approved the City's draft LCP. Therefore, the Commission's acceptance of the applicant's proposed mitigation for the loss of public access and recreational opportunities associated with the subject seawall should not be seen as Commission approval of the City's mitigation plan or of the City's economic study.

In the case of the proposed project, site-specific geotechnical evidence has been submitted indicating that the existing structure at the top of the bluff is in danger. The Commission feels strongly that approval of the proposed project should not send a signal that there is no need to address a range of alternatives to armoring for existing development. Planning for comprehensive protective measures should include a combination of approaches including limits on future bluff development, ground and surface water controls, and beach replenishment. Although the erosion potential on the subject site is such that action must be taken promptly, decisions regarding future shoreline protection should be done through a comprehensive planning effort that analyzes the impact of such a decision on the entire City shoreline.

The location of the proposed seawall and seacave fill is designated for Open Space Recreation in the City of Solana Beach Zoning Ordinance and General Plan, and was also designated for open space uses under the County LCP. As conditioned, the subject development is consistent with these requirements. Based on the above findings, the proposed development is consistent with the Chapter 3 policies of the Coastal Act in that the need for the shoreline protective devices has been documented and its adverse

impacts on beach sand supply and public access and recreation opportunities will be mitigated.

Therefore, the Commission finds the proposed development, as conditioned, is consistent with the Chapter 3 policies of the Coastal Act, and will not prejudice the ability of the City of Solana Beach to complete a certifiable local coastal program. However, these issues of shoreline planning will need to be addressed in a comprehensive manner in the future through the City's LCP certification process

7. Consistency with the California Environmental Quality Act (CEQA).

Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment.

The proposed project has been conditioned in order to be found consistent with the water quality, geologic stability, visual quality, and public access and recreation policies of the Coastal Act. Mitigation measures, including conditions addressing payment of an in-lieu fee for impacts to sand supply, requirements for minimizing impacts to public access and recreation, monitoring and maintenance of the structures over the lifetime of the project, color of construction materials, timing of construction and the use of BMP's will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and is consistent with the requirements of the Coastal Act to conform to CEQA.

STANDARD CONDITIONS:

1. Notice of Receipt and Acknowledgment. The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. Expiration. If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. Interpretation. Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

4. Assignment. The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

5. Terms and Conditions Run with the Land. These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

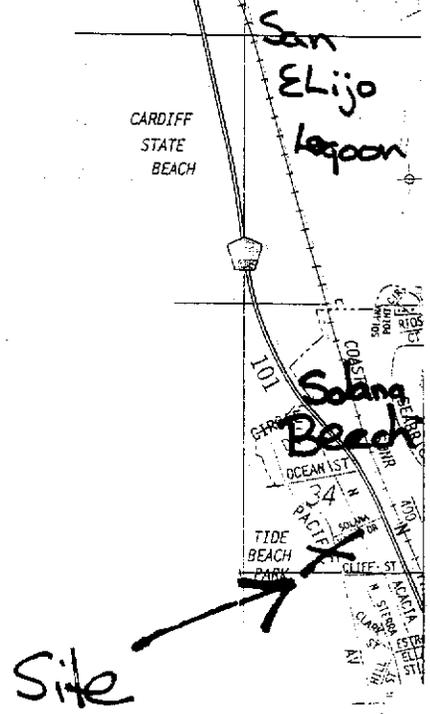
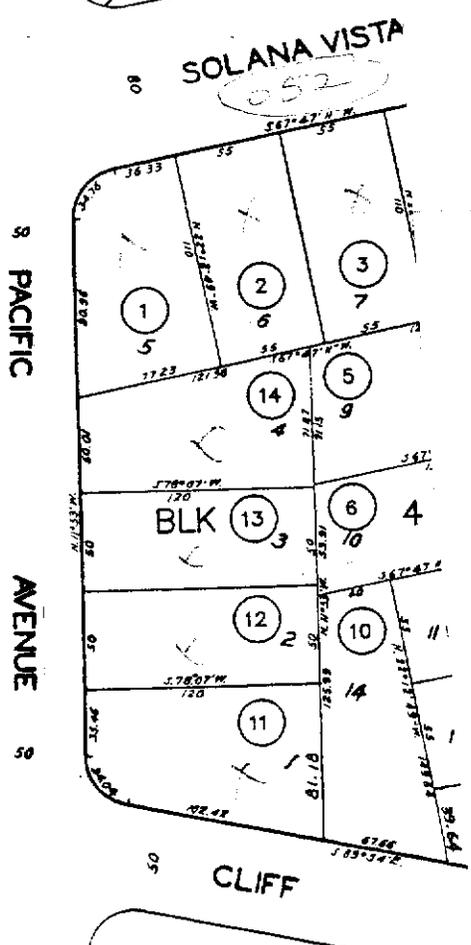
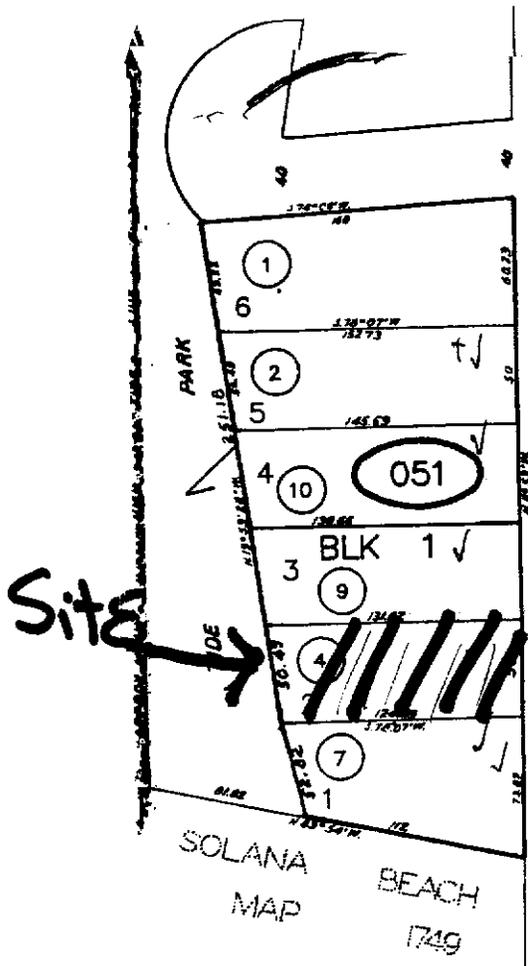
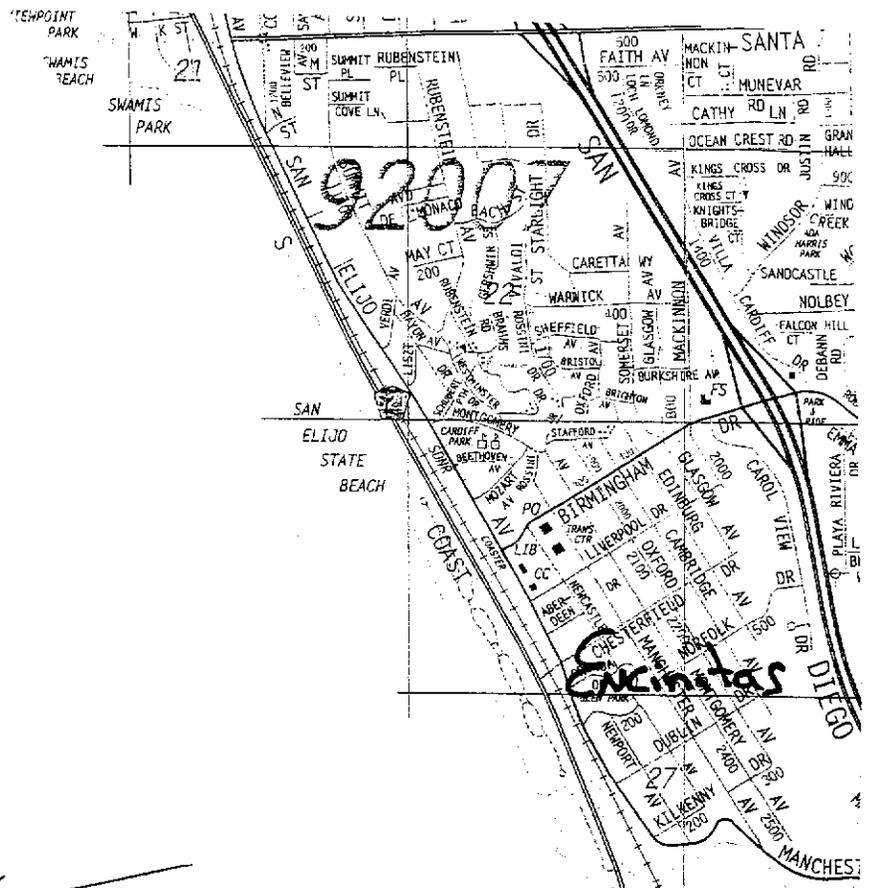
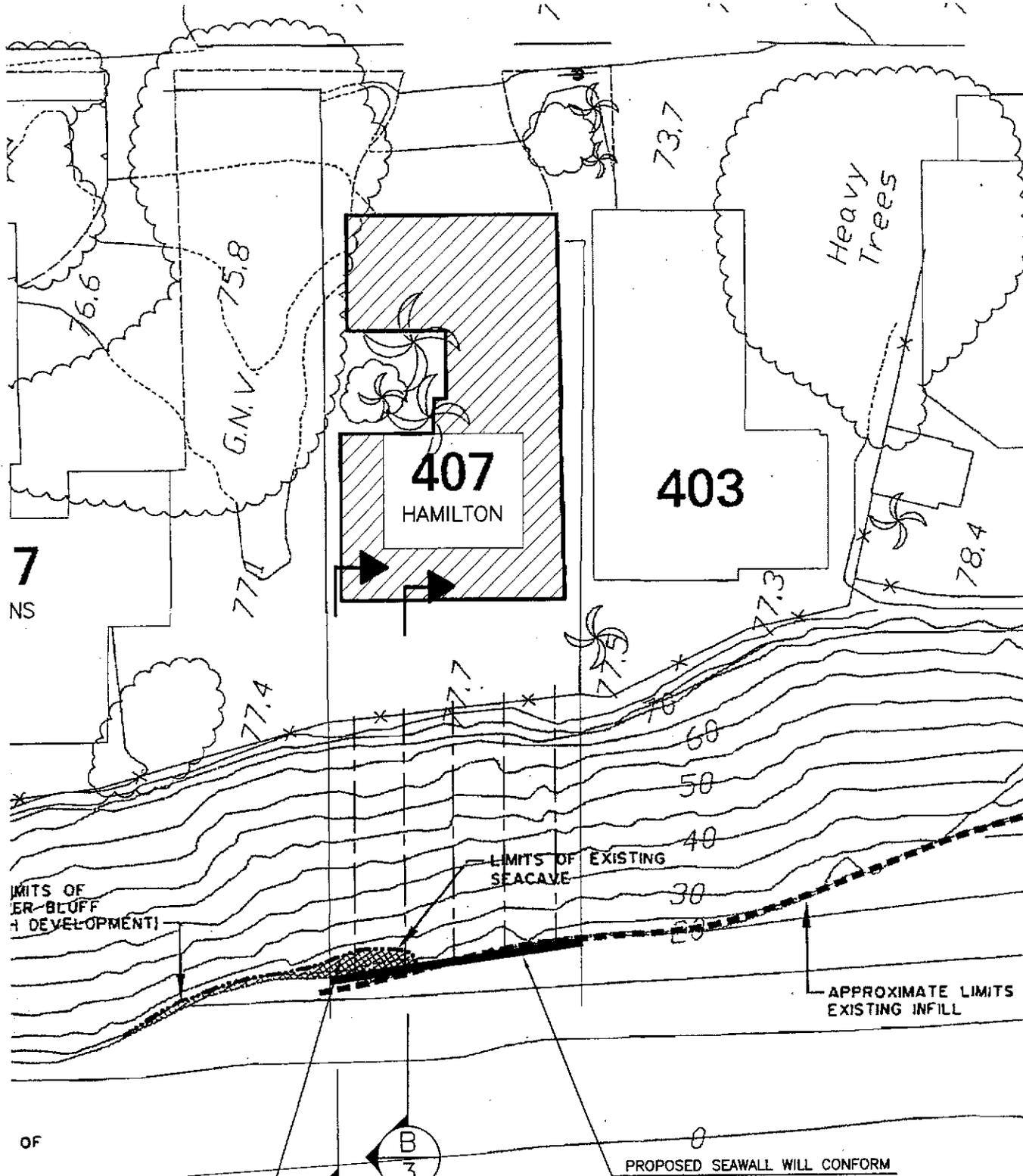


EXHIBIT NO. 1
 APPLICATION NO.
 6-08-68
 Location Map

California Coastal Commission



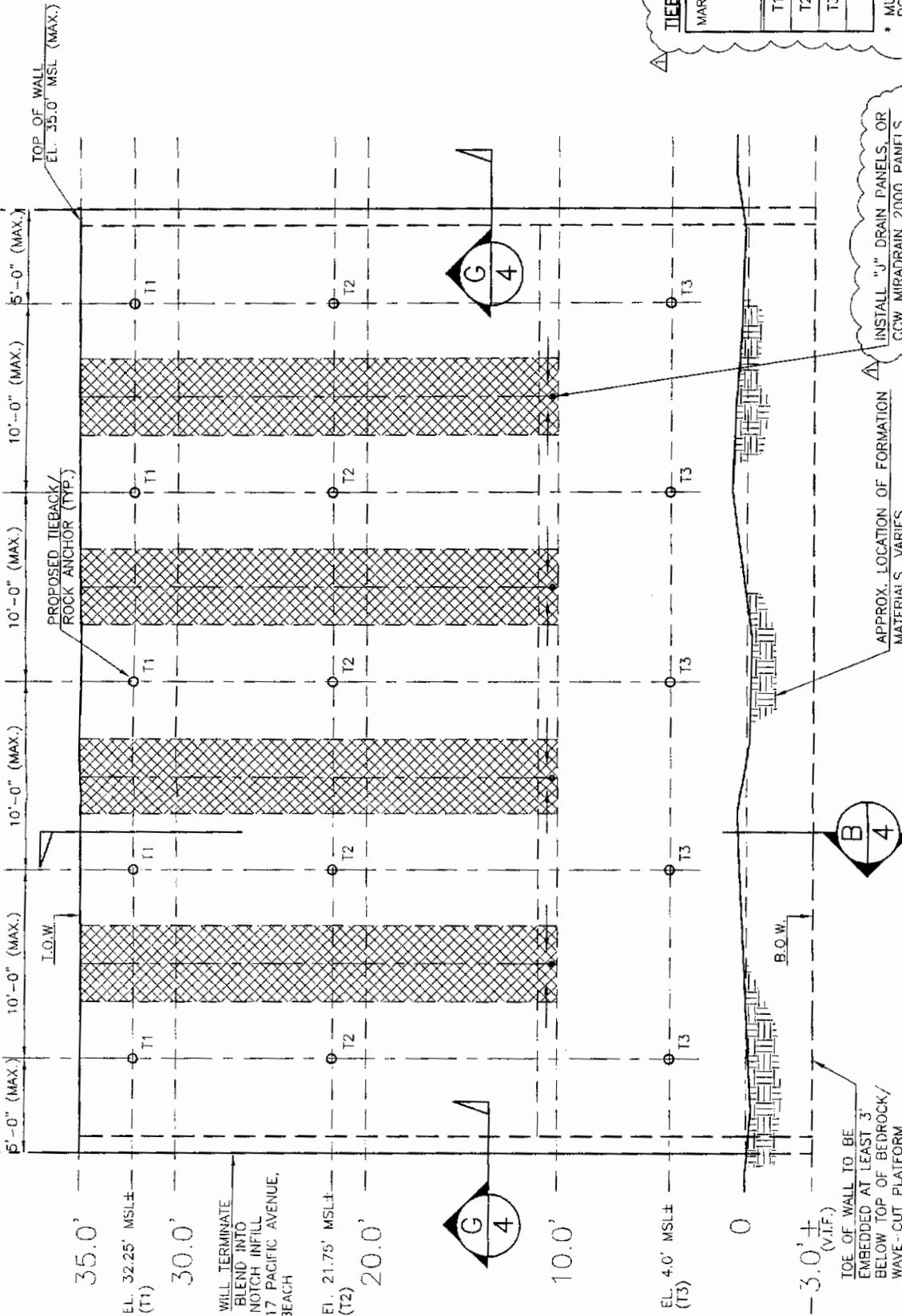
APPROXIMATE LIMITS OF EXISTING SEACAVE, UNDERCUT & SEACAVE INFILL TO BE PERFORMED PRIOR TO CONSTRUCTION OF SEAWALL.

PROPOSED SEAWALL WILL CONFORM TO CONTOURS OF LOWER BLUFF. WALL TO BE APPROX. 38'-0" HIGH TO EL 35.0 ± MSL AND 50'-0" ± LONG. WALL WILL BE SCULPTED AND COLOR-TREATED IN ACCORDANCE WITH STANDARDS OF CITY OF SOLANA BEACH

EXHIBIT NO. 2
APPLICATION NO.
6-08-68
Site Plan
California Coastal Commission

SCULPTURING, TEXTURING MATERIALS SHALL BE PE CONTRACTOR SPECIALIZING IN AND NATURAL FORMATION NOTCH/SEACAVE/UNDERTURE TO BLEND, TO APPEARANCE, TEXTURE, SURROUNDING NATURAL PROVIDED WITH INTEGRATION OF DAVIS COLORS, OR APPROVED EQUIV.), AND OR PERMEON (OR APPF TEXTURES AND CHARAC BASED ON SITE CONDITI CONTRACTOR, WITH CON SCULPTING CONTRACTOR COMPUTERIZED SIMULAT APPROVAL OF ACCEPTAI COMMENCING WORK.

SPECIAL CONDITION NO. 1
CONCRETE PLACEMENT BE PLACED VIA A CON PLACED AT THE FACE THE CONCRETE SETS, I INSTALLED AFTER THE WORKMEN WILL ACCESS PICKUP TRUCKS OR READY MIX TRUCKS WILL COVE RAMP. HOWEVER, WINTER STORMS, CONC THE BLUFF DOWN TO BE PERFORMED DURIN PRIMARY TAKE PLACE FROM THE CITY MANA EVENINGS DUE TO THE



TIEBACKS SCHEDULE - TABLE "A"

MARK	DESIGN LOAD KIPS	TEST LOAD KIPS	LOCK-OFF ZOI KIPS	UNB ZOI FEE (MI)
T1	180.0	240.0	108.0	
T2	80.0	107.0	48.0	
T3	110.0	147.0	66.0	

* MULTISTRAND ANCHORS, OR BARS, DCP-DOUBLE CORROSION PROTECT MULTISTRANDS. USE MULTISTRANDS TOTAL UP TO (15) ANCHORS/TIEB. TEST ALL ANCHORS/TIEBACKS TO LOCK-OFF OF ALL ANCHORS/TIEBACK ANCHORS TESTING PROC

PROFILE - WALL ELEVATION
SCALE: N.T.S.



CITY OF SOLANA BEACH

REPAIRS TO
MR. CHRIS HARRIS
407 BARNES

DESCRIPTION: SEE SHEET 2
LOCATION:
RECORD FROM:

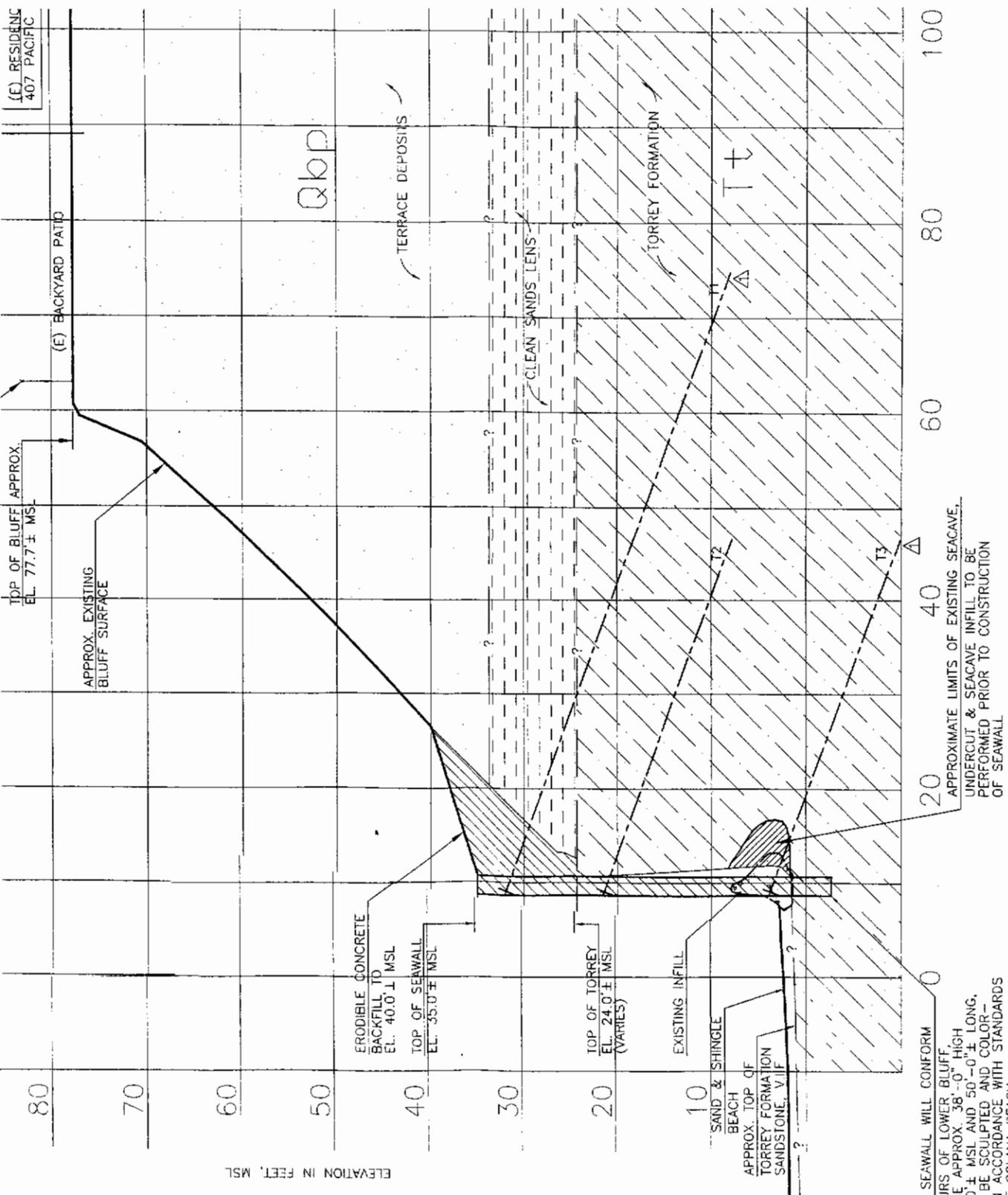
APPROVED FOR CONSTRUCTION
By: Mohammad Sommak, City Engineer

RECOMMENDED FOR APPROVAL
By: Review Engineer

DATE

EXHIBIT NO. 3
APPLICATION NO.
6-08-68
Seawall Profile

California Coastal Commission



ELEVATION IN FEET, MSL

EXHIBIT NO. 4
APPLICATION NO.
6-08-68
Cross-Section
California Coastal Commission

SAND MITIGATION FEE WORKSHEET

**Hamilton; 407 Pacific Avenue
Solana Beach
August, 2008**

50' Seawall

$$\begin{aligned}W &= \underline{50} \\E &= \underline{2} \\v &= \underline{.9} \\R &= \underline{0.27 \text{ ft.}} \\L &= \underline{20 \text{ yr.}} \\S &= \underline{.74} \\H_s &= \underline{37} \\H_u &= \underline{43} \\R_{cu} &= \underline{0.27 \text{ ft.}} \\R_{cs} &= \underline{0}\end{aligned}$$

$$\begin{aligned}A_w &= R \times L \times W \\A_w &= .27 \times 20 \times 50 \\A_w &= 270\end{aligned}$$

$$\begin{aligned}V_w &= A_w \times v \\V_w &= 270 \times .9 \\V_w &= 243\end{aligned}$$

$$\begin{aligned}A_e &= W \times E \\A_e &= 100\end{aligned}$$

$$\begin{aligned}V_e &= A_e \times v \\V_e &= 100 \times .9 \\V_e &= 90\end{aligned}$$

$$V_b = (S \times W \times L) \times [(R \times H_s) + (1/2 H_u \times (R + (R_{cu} - R_{cs})))] / 27$$
$$(S \times W \times L) = (.74 \times 50 \times 20) = 740$$

$$V_b = (740) \times [(R \times H_s) + (1/2 H_u \times (R + (R_{cu} - R_{cs})))] / 27$$

$$V_b = (740) \times [(.27 \times 37) + ((21.5) \times (.27 + (.27 - 0)) / 27$$

$$V_b = (740) \times [(9.9) + (11.61) / 27$$

$$V_b = (740) \times 21.51 / 27$$

$$V_b = 589.53$$

$$V_t = V_b + V_w + V_e$$

$$V_t = 589.53 + 243 + 90$$

$$V_t = 922.53$$

$$M = 922.53 \times 18.75 = 17,297.44$$

EXHIBIT NO. 5

APPLICATION NO.

6-08-68

Sand Fee Calcs



9178 Chesapeake Dr.
San Diego, CA 92123

Phone 858-518-7191
FAX 858-560-8950

Date: July 14, 2008

To: Mr. Bob Trettin
Trettin Company
9606 Laurentian Drive
San Diego, CA 92129

Project: Beach Quality Sand Import, Solana Beach

Scope of Proposal: Import =3,500 CY Beach Quality Sand to Fletcher Cove, Solana Beach

Bid Price: \$19.45/CY

Design Documents: None

Terms and Conditions:

1. This bid price is valid for 30 days from date above.
2. Payment terms are net 15 days. Balance due will be based on: LOAD TICKETS FOR DELIVERED MATERIALS
3. Bid price is based on one move in of personnel and equipment. Additional mobilizations are \$2,000.00 each.
4. Exclusions: Permits of any kind, compaction/soil testing.
5. Price is based on continued availability of sand stockpile as of bid date. Any deviations in availability of sand supply and quality will subject unit price herein to change.

We thank you for this opportunity to be of service! If you would like to proceed with this work, please call our office.

Sincerely,
Ground Force

 *Signature on file*

Dave Hoffman
Estimator

OCEAN RESTORATION PBA LTD

TO: MR. BOB TRETTIN, PRINCIPAL
THE TRETTIN COMPANY
9606 LAURENTIAN DR.
SAN DIEGO, CA, 92129

FROM: RAY FILES
DATE: 7-14-08

RE: Proposal to deliver sand to FLETCHER COVE, SOLANA BEACH

OCEAN RESTORATION proposes to deliver to FLETCHER COVE, SOLANA BEACH,
beach quality sand.

The maximum quantity is 5,000 cubic yards. The price per yard is \$21.50 including all cost of
the material and transportation to FLETCHER COVE.

Please contact us if you have any questions or if you would like for us to proceed.

RAY FILES
OCEAN RESTORATION

DILS CONTRACTING

July 16, 2008

TO: Mr. David Skelby
GeoSolis Inc
5741 Palmer Way
Carlsbad, CA 92010

SUBJECT: Estimate, Beach Quality Sand Delivery, Fletcher Cove, Solana
Beach & Terra Mar, Carlsbad, San Diego County

Dils Contracting will supply up to 200 tons (~5,400 yd) of beach quality (SE 30) delivered to Fletcher Cove in Solana Beach or Terra Mar, Carlsbad. The cost for delivery is \$30 per ton (1.8 ton/yd). This bid valid for 90 days from today date and subject to availability of materials and does not include and fees associated with permits for haul routes and off loading at Fletcher Cove. Upon your approval of this estimate, Dils Contracting will provide out standard work agreement for your review and signature.

It is our pleasure to provide this bid. Please call us if you have any questions.

Signature on file

Brent Dils
Owner

2230 La Mirada Drive Vista, CA 92083 760-672-3201
License # 639961